

Nepal - Willingness to Pay for Electricity

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Overview

Identification

COUNTRY

Nepal

EVALUATION TITLE

Willingness to Pay for Electricity

ID NUMBER

DDI-MCC-NEP-EA-ENERGY-2017-v01

Version

VERSION DESCRIPTION

- v01: Edited, anonymous dataset for public distribution.

Overview

ABSTRACT

The Willingness to Pay (WTP) Survey was funded by the Millennium Challenge Corporation (a bilateral United States foreign aid agency providing large-scale grants to fund country-led solutions for reducing poverty through sustainable economic growth) in partnership with the Government of Nepal (OMCN), and was carried out by CPCS/WSP/Econoler, a consortium of three leading Canadian firms in the energy sector. National implementation support and input was provided by Nepalese survey firm Solutions Consultant.

The main purpose of this survey was to: (1) assess the potential economic benefit of the incremental value of utilizing additional energy at a lower cost per unit of service in place of alternative energy sources such as: generators, candles, kerosene lamps, and batteries, for lighting and household appliances, and for commercial/industrial purposes; (2) Assess the willingness of households and businesses to pay more than they are currently paying for a supply of electrical energy with fewer scheduled and unscheduled outages and more stable voltage. The survey was designed to calculate for each targeted group its WTP for improved quality of power supply with regards to availability; range of fluctuation of quality; predictability of power supply interruption. The findings from the survey are expected to provide decision makers with valuable indications concerning the scope for possible tariff adjustments linked to improved quality of service. The survey also aimed to provide an estimate of the power demand curve of consumers as a key input for the calculation of consumers' surplus linked to power supply and improved quality of supply.

The survey was spread across 2300 households and 590 businesses in 58 districts across Nepal. The activities for the WTP were carried out over a period of 12 months between April 2016 (defining the scope of work) and April 2017 (finalization of the study report). A total of four questionnaires were developed for the survey (household, OOHB grid-connected, OOHB non-grid, business) and their content was converted to Computer Aided Personal Interviews (CAPI) format for electronic data collection using tablets fitted with GPS tracking. Apart from the household survey and the business survey, a separate price survey on grid-energy alternatives was carried out in the major cities across Nepal simultaneously with the main survey. The main objective of this survey was to collect market data regarding the all-inclusive costs of grid-energy alternatives to determine the "revealed willingness to pay" amongst electricity consumers in Nepal. The information collected through this exercise served as a complimentary input for the main survey task.

Solutions Consultant was hired as a local survey firm responsible for data collection and submission of a clean dataset for analysis. Solutions was involved in the design and adaptation of study tools into local language and was also responsible for programming the questionnaires into a mobile platform. Apart from this, Solutions carried out the sampling, training of the field enumerators; managing the fieldworks as per the sampling plan; data management and output generation, delivery of clean data along with the technical/field implementation report. The data analysis was carried out by economists and experts from WSP/CPCS.

UNITS OF ANALYSIS

Unit of Analysis:

The individual households were considered as the unit of analysis for household surveys whereas service and manufacturing enterprises were considered as a unit of analysis for business surveys.

Coverage

GEOGRAPHIC COVERAGE

Nepal is divided into 75 districts, which are further divided into smaller VDCs (designated as rural areas) and municipalities (designated as urban areas). The VDCs and municipalities, in turn, are further divided into wards which are the smallest administrative units. A total of 180 wards across 58 districts of Nepal were covered during the course of this survey. For the purpose of the regular Bidding process, the country was split into four Strata (Rural Hills, Rural Terai, Urban wards outside Kathmandu Valley and Urban Kathmandu Valley) based on the assumption that the electricity consumption could vary by geographical and demographical (urban/rural) characteristics.

UNIVERSE

Since the smallest administrative division or the "Wards" were considered as the Primary Sampling Unit for the study, the total number of wards across Nepal based on the population census of 2011 was considered as the survey universe or study population that comprised of 36,020 wards in total.

In terms of the sampled businesses, these were defined using Nepal's Inland Revenue Department (IRD) definition for small, medium, and large businesses. Small businesses have an annual turnover of less than NPR 50 million. Medium businesses have an annual turnover of between NPR 50 million and 400 million. Large businesses have an annual turnover of more than NPR 400 million.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
WSP	Primary Investigator
CPCS Transcom Limited	Co-Investigator
Solutions Consultant	Co-Investigator (Local Survey Firm)

OTHER PRODUCER(S)

Name	Affiliation	Role
WSP	Primary Investigator	Data analysis, Reporting
CPCS Transcom Limited	Co-Investigator	Data analysis, Reporting
Solutions Consultant	Co-Investigator (Local Survey Firm)	Data collection

FUNDING

Name	Abbreviation	Role
Millennium Challenge Corporation	MCC	

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Millennium Challenge Corporation	MCC		Review of Metadata
WSP	WSP	Primary Investigator	Data analysis, Reporting
CPCS Transcom Limited	CTL	Co-Investigator	Data analysis, Reporting
Solutions Consultant		Co-Investigator (Local Survey Firm)	Data collection

DATE OF METADATA PRODUCTION

2017-06-30

DDI DOCUMENT ID

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MCC Compact and Program

COMPACT OR THRESHOLD

Nepal Compact

PROGRAM

This survey is currently not being used for an independent evaluation, however it may inform the future evaluation of projects in Nepal.

MCC SECTOR

Energy (Energy)

Sampling

Study Population

Since the smallest administrative division or the "Wards" were considered as the Primary Sampling Unit for the study, the total number of wards across Nepal based on the population census of 2011 was considered as the survey universe or study population that comprised of 36,020 wards in total. In terms of the sampled businesses, these were defined using Nepal's Inland Revenue Department (IRD) definition for small, medium, and large businesses. Small businesses have an annual turnover of less than NPR 50 million. Medium businesses have an annual turnover of between NPR 50 million and 400 million. Large businesses have an annual turnover of more than NPR 400 million.

Sampling Procedure

For household data collection, a GIS-based household selection (predefined household selection using GIS) was followed in rural areas and a GIS-based Random Start or "Fanning" method was used in the urban areas (to avoid any selection bias against the most remote households in the rural areas), based on a sample frame obtained from the Nepal Electricity Authority (NEA).

In terms of business data collection, firms were directly contacted and surveyed through purposive sampling based on a sample frame provided by Nepal's Inland Revenue Department (IRD). The same definition used by the IRD to distinguish small, medium and large businesses (by annual turnover) was used to distinguish the surveyed businesses by size.

Weighting

In the estimation of costs of averting actions, the results for each sector are presented as percentages of the electricity bills, but weighted by the size of the individual respondent's electricity bill.

Questionnaires

No content available

Data Collection

Data Collection Dates

Start	End	Cycle
2016-11-08	2017-01-02	Household Survey
2016-11-14	2017-01-31	Business Survey

Data Collection Mode

A total of four questionnaires were developed for the survey (household, OOHB grid-connected, OOHB non-grid, business) and their content was converted to Computer Aided Personal Interviews (CAPI) format for electronic data collection using tablets fitted with GPS tracking. An initial set of English household and business questionnaires was developed. The questionnaires were further translated into the Nepali language and refined after discussions with the MCC team. Changes in accordance with their inputs were incorporated into the final version of the questionnaire and were translated into Nepali before the training. The Nepali questionnaire was again back-translated into English to check for any translation issues and errors. Altogether the following sets of questionnaires were developed and finalized which were later exported into the CAPI version: A. Household Questionnaire - English Version; B. Household Questionnaire - Nepali Version; C. OOHB Questionnaire - English Version; D. OOHB Questionnaire - Nepali Version; E. OOHB Questionnaire (Non-grid connected) - English Version; F. OOHB Questionnaire (Non-grid connected) - Nepali Version; G. Business Questionnaire - English Version; H. Business Questionnaire - Nepali Version.

Data Collection Notes

The data collection process was carried out face to face using computer aided personal interviewing (CAPI) technique. A multi stage stratified sampling approach was followed for sampling the households. The sample frame was based on the Nepal Population Census of 2011 from which the wards (primary sampling unit) were randomly selected using probability proportionate to size (PPS). In each of the selected wards 15 interviews were conducted. The household selection within the wards was done by using a GIS based household identification and sampling technique where the starting points for household surveys were randomly selected using aerial/satellite maps and were marked for selection. The satellite maps with GIS markers were then pre-loaded in the tablets so that the interviewers could track down the points to be reached after turning on the location services. After the GPS indicated that the destination had arrived, the enumerator visited the marked household for conducting the interviews.

For the business survey, a total of 600 businesses were sampled from the list of operating businesses that was provided by the Inland Revenue Department (IRD) of Nepal. After verifying the database, the businesses were randomly selected from the IRD list. An appointment was fixed with the businesses where they were pre-informed regarding the survey and their cooperation for participation was sought. The total sample of 600 businesses consisted of the Small, Medium and Large businesses belonging to both the Manufacturing and the Service Sectors. In order to categorize the businesses by size, the same definition of businesses used by the IRD was used. The businesses with an annual turnover of less than 50 million were categorized as Small businesses. Similarly, businesses with an annual turnover between 50 million and 400 million were categorized as medium businesses and the businesses with an annual turnover of more than 400 million were categorized as the large businesses.

Supervision

The field implementation team comprised of 9 supervisors and 24 enumerators who were trained and debriefed for the survey. Each household survey team consisted of 1 supervisor and 4 enumerators. A total of 6 teams were divided across the nation to conduct the survey. One team was allocated separately to conduct business interviews which consisted of 3 supervisor level staff. However, once the household surveys completed, 4 supervisors from the household survey team were also included in the business survey team to speed up the interview process.

The core team comprised of a Project Manager, Field Manager, Field Assistant and a Data Manager.

Data Processing

No content available

Data Appraisal

No content available